FIG. 1

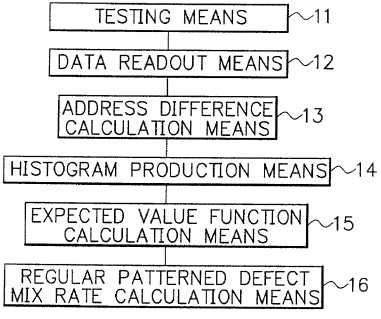
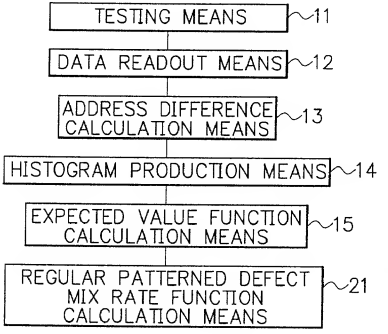

TESTING MEANS
11
DATA READOUT MEANS
12
ADDRESS DIFFERENCE CALCULATION MEANS
13
HISTOGRAM PRODUCTION MEANS
14
EXPECTED VALUE FUNCTION CALCULATION MEANS
15
REGULAR PATTERNED DEFECT MIX RATE CALCULATION MEANS
16

FIG. 2


TESTING MEANS
11
DATA READOUT MEANS
12
ADDRESS DIFFERENCE CALCULATION MEANS
13
HISTOGRAM PRODUCTION MEANS
14
EXPECTED VALUE FUNCTION CALCULATION MEANS
15
REGULAR PATTERNED DEFECT MIX RATE FUNCTION CALCULATION MEANS
21

F I G. 3

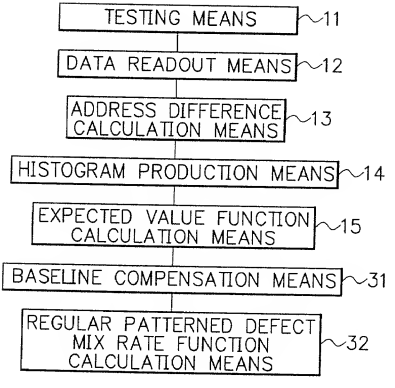
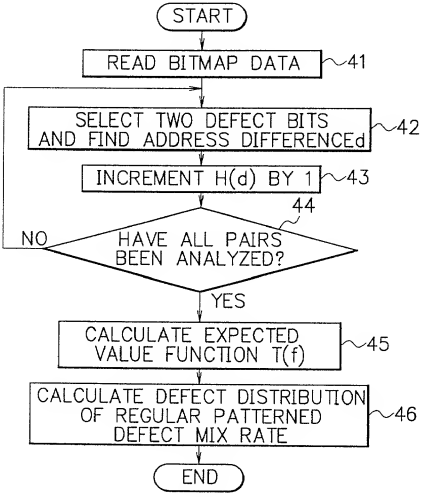

TESTING MEANS
11
DATA READOUT MEANS
12
ADDRESS DIFFERENCE CALCULATION MEANS
13
HISTOGRAM PRODUCTION MEANS
14
EXPECTED VALUE FUNCTION CALCULATION MEANS
15
BASELINE COMPENSATION MEANS
31
REGULAR PATTERNED DEFECT MIX RATE FUNCTION CALCULATION MEANS
32

FIG. 4


START
READ BITMAP DATA
41
SELECT TWO DEFECT BITS AND FIND ADDRESS DIFFERENCEd
42
INCREMENT H(d) BY 1
43
44
NO
HAVE ALL PAIRS BEEN ANALYZED?
YES
CALCULATE EXPECTED VALUE FUNCTION T(f)
45
CALCULATE DEFECT DISTRIBUTION OF REGULAR PATTERNED DEFECT MIX RATE
46
END

F I G. 5

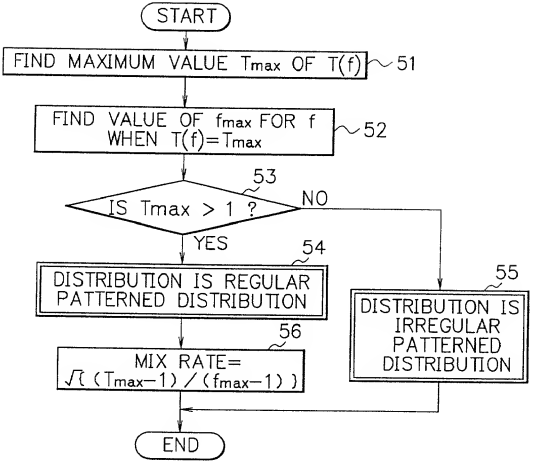

START
FIND MAXIMUM VALUE Tmax OF T(f)
51
FIND VALUE OF fmax FOR f WHEN T(f)=Tmax
52
53
IS Tmax > 1 ?
NO
YES
54
DISTRIBUTION IS REGULAR PATTERNED DISTRIBUTION
55
DISTRIBUTION IS IRREGULAR PATTERNED DISTRIBUTION
56
MIX RATE= √{(Tmax−1)/(fmax−1)}
END

FIG. 6

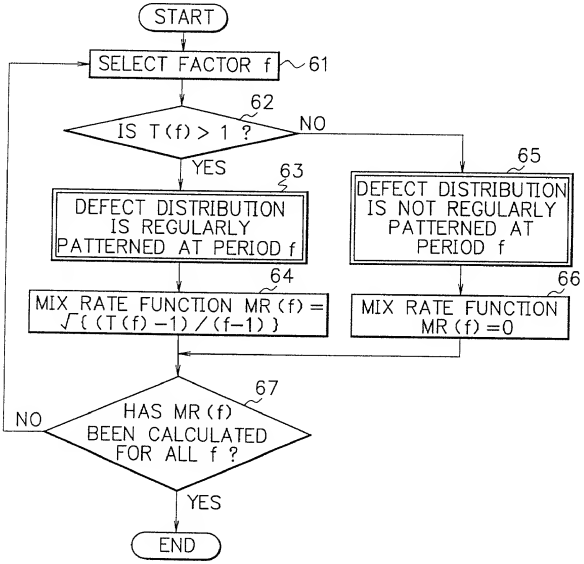

START
SELECT FACTOR f
61
62
IS T(f) > 1 ?
NO
YES
63
DEFECT DISTRIBUTION IS REGULARLY PATTERNED AT PERIOD f
64
MIX RATE FUNCTION MR(f) = √{ (T(f) −1) / (f−1) }
65
DEFECT DISTRIBUTION IS NOT REGULARLY PATTERNED AT PERIOD f
66
MIX RATE FUNCTION MR(f) = 0
67
HAS MR(f) BEEN CALCULATED FOR ALL f ?
NO
YES
END

FIG. 7

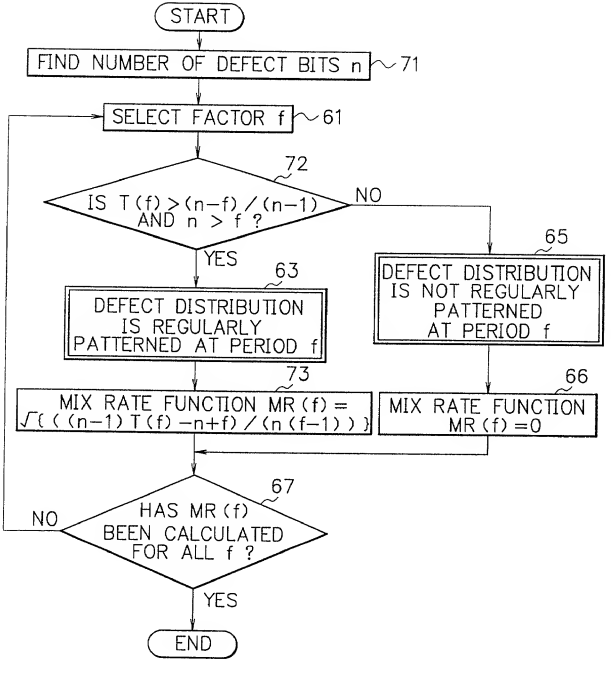

START
FIND NUMBER OF DEFECT BITS n
71
SELECT FACTOR f
61
72
IS T(f) > (n−f) / (n−1) AND n > f ?
NO
YES
65
DEFECT DISTRIBUTION IS NOT REGULARLY PATTERNED AT PERIOD f
63
DEFECT DISTRIBUTION IS REGULARLY PATTERNED AT PERIOD f
73
MIX RATE FUNCTION MR(f) = Σ{ ((n−1) T(f) −n+f) / (n(f−1)) }
66
MIX RATE FUNCTION MR(f) = 0
67
HAS MR(f) BEEN CALCULATED FOR ALL f ?
NO
YES
END

FIG. 8

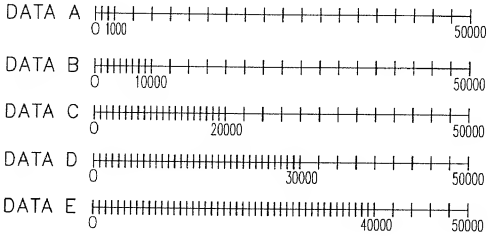
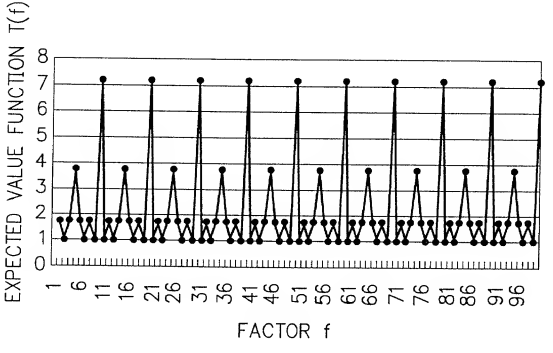

DATA A
0
1000
50000
DATA B
0
10000
50000
DATA C
0
20000
50000
DATA D
0
30000
50000
DATA E
0
40000
50000

FIG. 9


EXPECTED VALUE FUNCTION T(f)
0
1
2
3
4
5
6
7
8
1
6
11
16
21
26
31
36
41
46
51
56
61
66
71
76
81
86
91
96
FACTOR f

10220"08020

FIG. 10

FIG. 11

FIG. 12

1.04
1.03
1.02
1.01
1
0.99
0.98
0.97
EXPECTED VALUE FUNCTION T(f)
1
6
11
16
21
26
31
36
41
46
51
56
61
66
71
76
81
86
91
96
FACTOR f

FIG. 13

1.006
1.004
1.002
1
0.998
0.996
0.994
0.992
EXPECTED VALUE FUNCTION T(f)
1
6
11
16
21
26
31
36
41
46
51
56
61
66
71
76
81
86
91
96
FACTOR f

FIG. 14

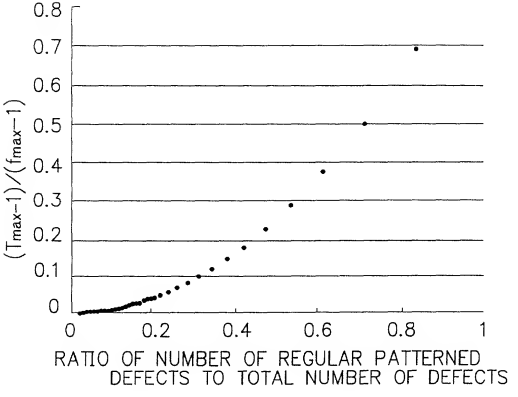

0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
(Tmax−1)/(fmax−1)
0
0.2
0.4
0.6
0.8
1
RATIO OF NUMBER OF REGULAR PATTERNED DEFECTS TO TOTAL NUMBER OF DEFECTS

FIG. 15

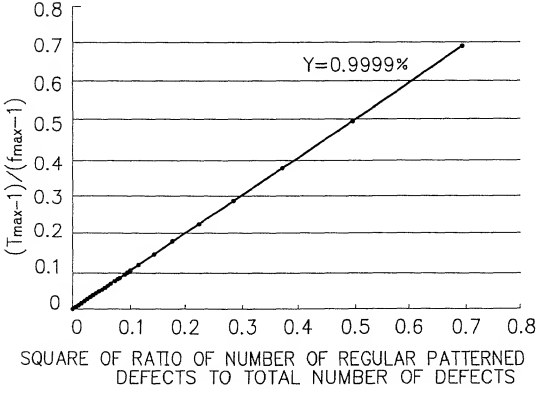

Y=0.9999%
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
(Tmax−1)/(fmax−1)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
SQUARE OF RATIO OF NUMBER OF REGULAR PATTERNED DEFECTS TO TOTAL NUMBER OF DEFECTS

FIG. 16A

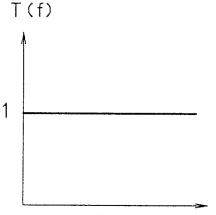


FIG. 16B

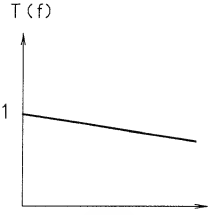


FIG. 17

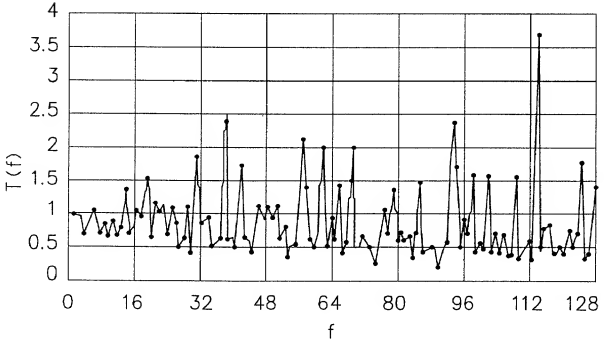
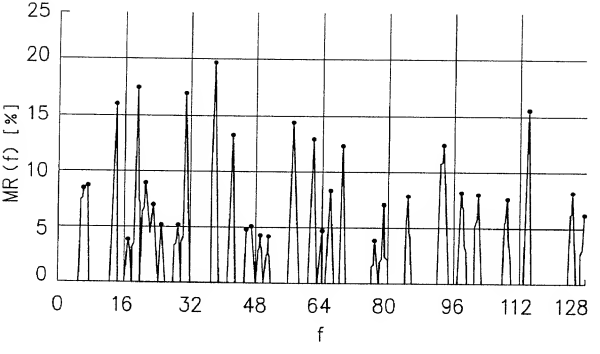



FIG. 18